

ASSIGNMENT-II

NORTH GAUHATI COLLEGE

Department of Physics

3rd Semester Physics General (Non-CBCS)

Paper code: 301, Heat

Total Marks: 15

(The figures in the margin indicate the full marks for the questions)

1. Why platinum is selected for the construction of thermometer? What should be the degree of purity of platinum used for preparing the thermometer? 1+1=2
2. What are the dimensions of 'a' and 'b' in the following equation:
$$\left(P + \frac{a}{V^2}\right)(V - b) = RT$$
, where P is pressure, V is volume, T is absolute temperature and R is gas constant. 1+1=2
3. What do you understand by degree of freedom of a particle? A particle in translatory motion has degrees of freedom, but it is rotating also, then it has five degrees of freedom. Explain it. 1+2=3
4. State and deduce Kirchhoff's law of radiation. Explain how the law helps to identify the elements of the sun's atmosphere. 3
5. A spherical black body of surface area 100 Sq. Cm is heated to 227°C. It is then placed in a constant temperature (black body) enclosure maintained at 27°C. At what rate energy must be supplied to the spherical body to keep its temperature constant. (Stefan's constant, $\sigma = 5.67 \times 10^{-8} \text{W/m}^2/\text{K}^4$) 2
6. Draw Andrew's curve for CO₂ at different temperatures and explain them. 3

Nota Bene:

- Write your answers in A4 paper sheet mentioning clearly **your name, GU roll number, registration number, paper code etc.** at the front page of your answer sheet.
- You have to make a single PDF file of your answer sheets.
- You need to submit your respective PDF at the online portal of our college website or at the mail id: ngcphysicsdept@gmail.com.
- The submission due date is on or before 10th August, 2021.